www.jhas-bhs.com

ScientificScholar®
Knowledge is power
Publisher of Scientific Journals

Journal of Hematology and Allied Sciences

Article in Press

Case Report

A case report on Von Willebrand disease: A hematological challenge in pregnancy

Yajnaseni Banerjee[1], Trisha Mukherjee[1]

[1]Department of Obstetrics and Gynaecology, Topiwala National Medical College, Mumbai, Maharashtra, India.

***Corresponding author:**
Yajnaseni Banerjee,
Department of Obstetrics and Gynaecology, Topiwala National Medical College, Mumbai, Maharashtra, India.

b.yajnaseni93@gmail.com

Received: 19 June 2024
Accepted: 17 October 2024
EPub Ahead of Print: 20 November 2024
Published:

DOI
10.25259/JHAS_35_2024

Quick Response Code:

ABSTRACT

Von Willebrand disease (VWD) is the most common inherited bleeding disorder caused by a deficiency in von Willebrand factor (VWF), which can be either quantitative or qualitative. There are three types of VWD, with Type III being the rarest but most severe form. In pregnant women, VWD can pose life-threatening risks during labor and the early postpartum period. At present, there is no curative treatment for this disorder, so management focuses on early diagnosis and minimizing blood loss. We present the case of a 28-year-old female diagnosed with VWD during her first pregnancy. While her prenatal period was uneventful, she experienced complications postpartum following an instrumental vaginal delivery. However, with a collaborative effort from a multidisciplinary team, both the mother and baby had favorable outcomes. Timely diagnosis, initiation of prepartum and intrapartum VWF and, clotting factor replacement therapy, careful monitoring of postpartum bleeding, and consistent follow-up are crucial to enhance recovery and prevent complications.

Keywords: Von Willebrand disease, Von Willebrand factor, Vulvar hematoma, Factor VIII, Tranexamic acid, Pregnancy

INTRODUCTION

Von Willebrand disease (VWD) is a prevalent hereditary bleeding disorder caused by deficiencies or dysfunctions in von Willebrand factor (VWF), a vital protein involved in blood clotting.[1] Named after Dr. Erik von Willebrand, who identified it in the 1920s, VWD affects both genders and stands as the most common inherited bleeding disorder.[2] The reported prevalence varies widely, with population-based studies estimating rates between 108.9 and 2200 cases/100,000 individuals, whereas referral-based studies suggest a lower range of 0.3–16.5 cases/100,000 people.[3] VWF is a critical plasma glycoprotein essential for platelet adhesion at vascular injury sites and for stabilizing blood clotting factor VIII (FVIII). Deficiencies in VWF can result in bleeding due to impaired platelet function or decreased FVIII levels.[1] The International Society on Thrombosis and Haemostasis categorizes VWD into three types based on VWF defects:

- Type 1 VWD: The mildest and most common form characterized by a partial deficiency of functional VWF
- Type 2 VWD: Involves qualitative defects in VWF, with subtypes (2A, 2B, 2M, and 2N) showing specific functional abnormalities
- Type 3 VWD: The rarest and most severe form, marked by a near-complete absence of VWF, resulting in significantly low levels of both VWF and FVIII, leading to severe bleeding.[4]

Common symptoms of VWD include minor mucocutaneous bleeding such as nosebleeds, gum bleeding, and easy bruising. Procedures such as tooth extractions or tonsillectomies may cause prolonged bleeding, whereas severe bleeding episodes such as gastrointestinal or joint bleeding (hemarthrosis) are rarer and typically associated with type 2 or type 3 VWD.[3,5]

Although VWD affects both sexes equally, women are at increased risk due to factors such as menstruation, pregnancy, and childbirth, which can worsen bleeding in combination with obstetric factors such as uterine atony, episiotomy, or difficult deliveries. Diagnosis remains particularly challenging in resource-limited settings, adding to the complex and frequently misunderstood nature of the condition.

CASE REPORT

A 23-year-old primigravida presented for prenatal care at 12 weeks of pregnancy with a confirmed diagnosis of Type 3 VWD. Before conception, she experienced frequent heavy menstrual bleeding and nosebleeds, leading to medical attention and a diagnosis. There was no family history of similar bleeding disorders. Her laboratory results indicated:

- Prolonged bleeding time of 12 min (normal range: 2–8 min)
- Activated partial thromboplastin time of 61.3 s (control range: 25–40 s)
- Normal prothrombin time of 14 s (control range: 10–15 s)
- Platelet count of 230×10^9/L (normal range: $150–400 \times 10^9$/L)
- Hemoglobin level of 11.5 g/dL
- Markedly impaired ristocetin-induced platelet aggregation with ristocetin 1.5 mg/mL
- FVIII level of 2% (normal range: 60–160%)
- VWF antigen assay ≤1% (normal range: 50–160%)
- Ristocetin cofactor activity <1% (normal range: 50–200%).

During prenatal visits with her health-care team and hematologist, she remained stable without complications until 28 weeks of pregnancy when she was diagnosed with gestational diabetes mellitus, managed with Medical Nutritional Therapy. Serial ultrasounds showed normal fetal growth without placental abnormalities. Other prenatal tests were within normal limits. She was admitted for safe delivery at 36 weeks and received prophylactic FVIII (20 IU/kg) as recommended.

Labor began spontaneously at 39 weeks, and she underwent instrumental vaginal delivery, delivering a healthy 3.2 kg baby girl. During labor, she received intrapartum FVIII transfusion (80%). Unfortunately, she developed a 5 × 5 cm left-sided vulval hematoma 6 h postpartum, requiring surgical intervention under general anesthesia. Vaginal exploration revealed an 8 × 5 × 5 cm hematoma and the removal of approximately 350 g of blood clots [Figure 1].

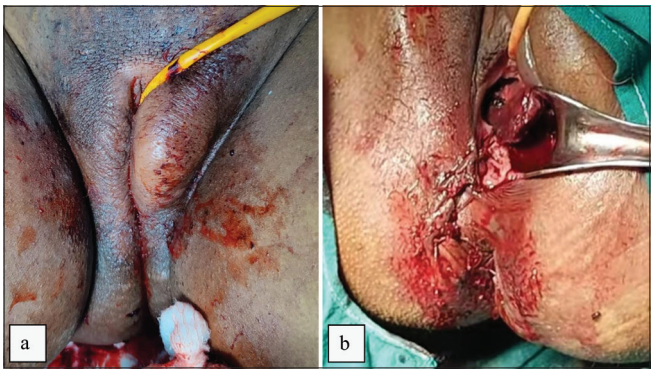

Figure 1: A 28-year-old female with Von Willebrand disease examined 2 h following vaginal delivery with episiotomy. (a) Left vulvar hematoma seen on inspection. (b) 350 cc clots were evacuated during vaginal exploration.

Two units of packed red blood cells were transfused, and hemostasis was achieved.

Post-delivery, she received daily correction of 60% FVIII levels divided into two doses for 3 days, along with tranexamic acid (1 g 3 times daily). She did not require further factor correction or blood transfusions and was discharged on day 10 after delivery. Weekly follow-ups continued until 6 weeks post-delivery, during which no bleeding diathesis or postpartum hemorrhage was reported up to day 42.

DISCUSSION

Women with VWD planning pregnancy should receive counseling about the increased risks of bleeding complications during pregnancy and significant postpartum hemorrhage risk. Genetic counseling before conception is crucial to discuss the potential inheritance of the disease to offspring.

During pregnancy, VWF and FVIII levels typically increase, peaking around 34 weeks gestation and decreasing postpartum. Women with type I VWD may achieve VWF and FVIII levels within the normal range (>50 IU/dL) and generally manage pregnancy well. Monitoring VWF and FVIII levels throughout pregnancy is recommended, especially in type III VWD, where levels do not increase similarly.[6]

In terms of obstetric complications, about 33% of women with VWD experience 1st-trimester bleeding, though miscarriage rates are similar to those in the general population (12–25%). There is no increased risk of antepartum hemorrhage, but these women have higher rates of primary and secondary postpartum hemorrhage (20–29%), usually occurring around 15.7 ± 5.2 days after delivery. Perineal hematomas are also more common in these cases, highlighting the need for regular clinical evaluation and postpartum monitoring.[7]

Infants born to mothers with VWD are at increased risk for intracranial hemorrhage and scalp hematoma during labor,

especially with invasive fetal monitoring or instrumental delivery.[7,8]

Management options during pregnancy include desmopressin, cryoprecipitate transfusion, and antifibrinolytic therapy. Desmopressin acetate, effective in type I VWD by promoting VWF release, is ineffective in type III VWD.[9] The safety of these treatments during pregnancy and lactation remains uncertain, although tranexamic acid has been used without apparent adverse effects.[9,10]

For type III VWD or those unresponsive to desmopressin, virally inactivated VWF/FVIII concentrates (plasma-derived FVIII/intermediate purity FVIII) are preferred, though their high-cost limits accessibility.[10]

CONCLUSION

Diagnosing and managing VWD in pregnancy present a challenging clinical task, particularly in obstetric settings. This case underscores the importance of early diagnosis, timely initiation of VWF and clotting factor replacement therapy, vigilant monitoring for postpartum bleeding, and systematic follow-up for optimal recovery and prevention of adverse outcomes. These measures are essential for ensuring the well-being of women with VWD throughout pregnancy and childbirth.

Ethical approval

Institutional Review Board approval is not required.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

Use of artificial intelligence (AI)-assisted technology for manuscript preparation

The authors confirm that there was no use of artificial intelligence (AI)-assisted technology for assisting in the writing or editing of the manuscript and no images were manipulated using AI.

REFERENCES

1. James AH. Von willebrand disease. Obstet Gynecol Surv 2006; 61:136-45.
2. National Heart, Lung, and Blood Institute (NHLBI). The diagnosis, evaluation and management of von willebrand disease. Report No.: 08-5832. Washington, DC: NIH Publication; 2008.
3. Du P, Bergamasco A, Moride Y, Truong Berthoz F, Özen G, Tzivelekis S. Von Willebrand disease epidemiology, burden of illness and management: A systematic review. J Blood Med 2023;14:189-208.
4. Castaman G, James PD. Pregnancy and delivery in women with von Willebrand disease. Eur J Haematol 2019;103:73-9.
5. Kujovich JL. Von Willebrand disease and pregnancy. J Thromb Haemost 2005;3:246-53.
6. Rashmi AG, Kumar R, Dayamayi AS, Nallipilli S. Von Willebrand disease in pregnancy: A case report. Int J Reprod Contracept Obstet Gynecol 2021;10:4602-5.
7. Sladić M, Verdenik I, Smrkolj Š. The effect of von Willebrand disease on pregnancy, delivery, and postpartum period: A retrospective observational study. Medicina (Kaunas) 2022; 58:774.
8. Varghese S, Mahindru D. Management of von Willebrand disease in pregnancy. CHRISMED J Health Res 2017;4:225-7.
9. Nichols WL, Hultin MB, James AH, Manco-Johnson MJ, Montgomery RR, Ortel TL, *et al*. Von Willebrand disease (VWD): Evidence-based diagnosis and management guidelines, the National Heart, Lung, and Blood Institute (NHLBI) expert panel report (USA). Haemophilia 2008;14:171-232.
10. Mannucci PM. Dose linearity of a von Willebrand/factor VIII concentrate (Haemate P) in elective surgery in von Willebrand disease patients. Blood 2003;102:312a.

How to cite this article: Banerjee Y, Mukherjee T. A case report on Von Willebrand disease: A hematological challenge in pregnancy. J Hematol Allied Sci. doi: 10.25259/JHAS_35_2024